AIR CONTENT OF FRESHLY MIXED CONCRETE BY THE VOLUMETRIC METHOD ASTM C 173

APPARATUS

[ ] Air Meter has a calibration within the last 3 years
[ ] Funnel
  [ ] Spout of a size permitting insertion through neck of top section
  [ ] Spout long enough to extend to a point just above bottom of top section
  [ ] Discharge end of spout so constructed that when water added to container there is minimum disturbance of concrete
[ ] Tamping Rod
  [ ] Round, straight 5/8 in. diameter rod
  [ ] Not less than 12 in. in length
  [ ] Tamping end rounded to hemispherical tip with diameter of 5/8 in.
  [ ] Steel, high density polyethylene, or other plastic of equal or greater abrasion resistance
[ ] Strike-Off Bar
  [ ] Flat, straight bar of steel at least 1/8 in. thick by 3/4 in. wide by 12 in. long
  [ ] Flat, straight bar of high density polyethylene or other plastic of equal or greater abrasion resistance at least 1/4 in. thick by 3/4 in. wide by 12 in. long
[ ] Calibrated Cup, within 1.03 ± 0.04 percent of volume of bowl (Note 1)
[ ] Syringe, rubber bulb with a capacity at least that of the calibrated cup
[ ] Pouring Vessel, with capacity of approximately 1 qt
[ ] Scoop, metal
[ ] Isopropyl Alcohol, 70 percent by volume (Note 2)
[ ] Mallet
  [ ] Rubber or rawhide head
  [ ] Weight of 1.25 ± 0.5 lb

Note 1 -- The volume of the calibrated cup is slightly larger than 1.0 percent of the volume of the bowl to compensate for the volume contraction that takes place when 70 percent isopropyl alcohol is mixed with water. Other alcohols or defoaming agents could be used if calculations show that their use will result in an error in indicated air content less than 0.1 percent. The calibrated cup should not be used to determine the accuracy of the gradations on the neck of the top section

Note 2 -- Seventy percent isopropyl alcohol is commonly available as rubbing alcohol. More concentrated grades can be diluted with water to the required concentration.

PROCEDURE

[ ] Bowl filled in three layers of approximately equal depth using metal scoop
[ ] Each layer rodded 25 strokes with tamping rod
[ ] Bowl tapped 10 to 15 times with mallet after each layer is rodded
[ ] Top surface struck off with bar until surface is flush with top of bowl
[ ] Flange of bowl wiped clean
[ ] Top section attached, funnel inserted, and water added until it appears in the neck (Note 3)
[ ] Funnel removed and water added with rubber syringe until the bottom of the miniscus is level with zero mark
[ ] Cap attached and tightened
[ ] Meter inverted and agitated for a minimum of 45 seconds (meter not inverted for more than 5 seconds at a time) (Note 4)
[ ] Meter tilted approximately 45 degrees and vigorously rolled and rocked for approximately 1 minute, with neck elevated at all times
[ ] Meter set upright and allowed to stand until liquid level stabilizes by not changing more than 0.1 percent within 1 minute period
[ ] If liquid level obscured by foam, alcohol added by syringe in one calibrated cup increments to establish a readable liquid level
[ ] The number of calibrated cups of alcohol recorded, and liquid level read at bottom of miniscus to nearest 0.25 percent air (Note 5)
[ ] One minute rolling and rocking procedure repeated until two consecutive readings do not change by more than 0.25 percent air
[ ] Meter disassembled and contents examined to assure there are no portions of undisturbed, tightly packed concrete in base
[ ] If alcohol added to meter in one calibrated cup increments, the air content is calculated by adding the number of alcohol cups to meter reading

Note 3 -- When filling the airmeter with water, the addition of a quantity of alcohol facilitates the removal of air from high air content or high cement content concrete.

Note 4 -- This procedure is intended to free the concrete from the base. When the concrete has broken free, the aggregate can be heard moving in the airmeter.

Note 5 -- It may require more than 20 minutes for the liquid level to stabilize when moderately high cement content concrete contains more than 6 percent air.

NA - Not Applicable
X - Requires Corrective Action
√ - Satisfactory

_____
Acceptance Technician

_____ _____
INDOT Date

Comments _____